Approved For Release 2002/10/31 : CIA-RDP70B00783R000100130026-1

SECRET

COR-1661
Copy 2 of 5

NRO REVIEW COMPLETED

28 May 1962

MEMORANDUM FOR: Finance Officer, DPD

THROUGH : CH/DB/DPD

NRO 25X1

SUBJECT : Contract [redacted] CORONA
Invention Disclosures

1. Attached hereto is Contractor's Invention and Royalty Reports for subject contract.

25X1A

2. Attention is invited to the three (3) Disclosures of Invention numbered D-03-1566, D-03-1567 and D-03-1568. Contractor has stated in [redacted]4013 that they do not intend to file for patents at this time nor in their opinion do these inventions involve any security problem.

3. The Contracting Officer and the Chief, Development Branch, concur in Contractor's statement regarding security classification; further, the Chief, Development Branch, is of the opinion that the Government should not file for patents on its own behalf. In the event the Contractor does file and is granted a patent, the Government will receive a free license right.

4. In view of the foregoing, Finance, DPD, is requested to consider the attachment as meeting the reporting requirements under the contract and make payments of amounts withheld for reasons thereof.

25X1A

[redacted]
Chief, Contracts Staff, DPD

CONCURRENCE:

JOHN PARANGOSKY
Chief, Development Branch, DPD

CS/DPD-DD/R:cc
Distribution:
Cy 1 - FIN/DPD w/att.
2 - CH/DB/DPD w/att.
3 - CS/DPD [redacted] w/ATT.
4 - RI/DPD
5 - CS Chrono

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D-03-1567

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RNA

14 00099143D

DISCLOSURE OF INVENTION

PATENT DEPARTMENT

LOCKHEED AIRCRAFT CORPORATION
MISSILES and SPACE DIVISION

This disclosure of invention form sheet is for the purpose of securing a disclosure and record date of invention and it is important that it be made out and filed with the Patent Department as soon as possible after conception of the invention in order that priority rights to the invention may be secured. A separate sheet may be used for each invention or modification of the invention and each sheet should be signed and dated by the inventor and also signed and dated by witnesses, preferably two, by whom the contents of the disclosure have been read and understood.

IN THE SPACE BELOW, give a clear and concise explanation of the invention. If it is purely a process give a complete description of it including flow diagrams; if it is a method capable of being illustrated by a sketch or where it is an apparatus, circuit or mechanical device, the disclosure should consist of a sketch with the parts numbered with a description of the sketch and method of operation making reference to the numbered parts. If possible a specific illustrative example and operative description of the invention should be included.

If the space below is inadequate, attach separate drawings or prints and description, properly signed, witnessed and dated.

All of the following entries should be made preferably in ink or type.

1. TITLE OF INVENTION SINK VALVE

2. SKETCH AND DESCRIPTION OF INVENTION

(Also list and identify herein all attached drawings and descriptions)

1. ELECTRO-CHEMICAL SINK VALVE TEST REPORT (4 SHEETS)

2 FLIGHT ARTICLE SHOP DRWGS

T2-1285
S1
S2
S3
S4

FORM LMSC 675-2

(over)

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3. PURPOSE of the invention A LIGHT WEIGHT, COMPACT, SELF CONTAINED, FAIL SAFE, DEVISE TO SINK THE CAPSULE AFTER IT HAS BEEN IN THE WATER A GIVEN LENGTH OF TIME.

4. PREVIOUS METHOD or apparatus A SALT DISSOLVING DEVISE

5. INFORMATION on previous method or apparatus; known use, publication or patents IT IS UNAFFECTED BY

6. HOW does this invention differ from previous method or apparatus and what advantages does it offer? IT IS UNAFFECTED BY THE MANY VARIABLE ENVIRONMENTAL CONDITIONS THAT STRONGLY INFLUENCE THE SALT TYPE VALVE (SEE ATTATCHED REPORT)

7. DATE OF CONCEPTION (when you first thought of the idea) 10-5, 19 60

8. (a) First sketch or drawing made on 10-5, 19 60
Where filed

(b) First written description made on 12-16, 19 60
Where filed

25X1A

NOTE: Where possible the above sketches, drawings and descriptions should be attached to this sheet.

9. INVENTION was first disclosed to:
(1) [redacted] Date 10-5, 1960, How SKETCH
(2) [redacted] Date 10-5, 1960, How SKETCH

10. FIRST APPARATUS (a) started on 10-5, 1960 (b) completed on 12-10, 1960

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11. FIRST OPERATION of apparatus or process (a) started DEC., 1960 (b) completed JAN, 1961
(c) Observed by [redacted] and
(d) Apparatus or result of process located at

12. OTHER ACTS tending to prove conception, such as preparation of calculations, preparation of shop order for model, etc., giving dates and state where such data is filed:
SHOP DRWGS
TEST REPORT

25X1A

SHOWN and DESCRIBED to me/us on this 16 day of JAN 1962

[redacted]

WITNESSES' SIGNATURES

25X1A

13. I (we) hereby certify that, to the best of my (our) knowledge, I am (we are) the first and original inventor(s) of the subject matter hereinbefore described.
this 5 & 8 day of Sept., 1961

[redacted]

NAME (Ple[redacted]
Home Addr[redacted]
Orgn. 62[redacted]
Division Name

Employee No.

Inventor's Signature

NAME (Please Print)
Home Address
Orgn. Bldg. Phone Extension
Division Name

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ILLEGIB

14 000991440

[redacted]

Subject: ELECTRO-CHEMICAL SINK VALVE TEST REPORT

CONCLUSION

The sink valve life will be 55 hours minimum to 85 hours maximum, using 25 ohms resistance in the circuit. This figure is adjustable by changing the resistance.

The valve proves to be unaffected by all the varying environmental conditions.

For degree of spread thru tolerance, see attached chart.

ADVANTAGE

The advantages of the Electro-Chemical sink valve over the presently used salt type sink valve are:

1. Reliability
   a. Unaffected by the many variable environmental conditions that strongly influence the salt type valve.
   b. Higher accuracy.
2. More compact.
3. More easily adjustable to required life changes.

DESIGN

The Electro-Chemical sink valve is a modification of a valve used successfully by the Navy to sink mines and is initiated by water. It is completely self-contained and self-reliant. As a further fail-safe policy, two are installed. The method of operation is Electro-Galvanic corrosion of a zinc plate caused by an electric current furnished by an integral silver chloride sea water battery. The rate of corrosion is closely controlled by a resistance in the electrical circuit. The life of the valve may be changed by simply changing the resistance.

TEST EQUIPMENT

1. Tank: All laboratory tests were conducted in a tank filled with sea water. Water temperature was furnished by a calrod and controlled by a thermostat. Agitation was furnished by a motor and propeller.

   Fresh sea water was used for every test.

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2. Vessels: Unless otherwise stated, all vessels were 3" x 3" x 6" plastic freezer containers, lead weighted for stability.

TESTS

1. Resistance Selection: Water temperature was set at 75°F. Agitation was calibrated with a salt valve, the dissolving rate known from a previous ocean test encountering State 3 seas.

a. Six valves were tested with resistance as shown:

Resistance Ohms	Life Hours
5	32
10	42
15	54
20	64
25	70
30	80

These results indicated 20 Ohms or 25 Ohms to be ball park figures.

b. Three valves were tested with 20 Ohms resistance life = 50 to 67 hours.

c. Six valves were tested with 25 Ohms resistance life = 55 to 74 hours.

Conclusion: Resistance for 55 hours minimum is 25 Ohms.

2. Agitation Effect: Water temperature was set at 75°F. Agitation was calibrated to a previous ocean test in calm water.

Two valves were tested: Life = 71 and 73 hours.

Conclusion: Agitation has no effect.

3. Temperature Effect: Water temperature was set at 60°F. Agitation same as 2. (Calm).

Two valves were tested: Life = 75 to 78 hours.

Conclusion: Temperature has very slight effect.

4. Water in Capsule Effect: Water temperature was set at 75°F. Agitation same as 1. (Stormy).

Three valves were tested with water in gold plated aluminum vessels: Life = 62 to 70 hours.

Conclusion: Water in capsule has no effect.

5. Gold Cathode Effect: Water temperature was set at 60°F. Agitation same as 2 (Calm).

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One valve was tested in a vessel mfg. from actual bucket material: Life = 72 hours.

Conclusion: This test and Test 4 indicate gold has no effect on valve.

6. Environmental:

a. Vibration: 20 to 2000 cps @ 5 g's on 10 min. simusoidal sweep in 3 axis.

b. Altitude: 150,000 ft. vacuum for 10 min.

Conclusion: No effect.

7. Heat: Max. expected flight heating in sink valve area is 120°F.

One valve was installed in a bucket section and soaked for 5 min. at 200°F.

Conclusion: No loosening or deformation of valve.

8. Ocean Test: Six valves were installed in a Mk. II capsule. The capsule was weighted to float at the correct water line.

The capsule was then anchored off San Clemente Island in the open sea. Water temperature was 58°F. The sea state during the test period ranged thru every condition, from dead calm to stormy with 30 knot winds and 12 ft. seas, giving a good average sea condition. Life = 73 to 85 hours.

Conclusion: Valves survived natural environment test as predicted.

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[redacted]

FW:lf

cc: [redacted] 25X1A

File 1
File 2
File 3

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NO. 340R-10 DIETZGEN GRAPH PAPER
10 X 10 PER INCH
EUGENE DIETZGEN CO.
MADE IN U.S.A.
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12-15-60
F.W.

E-C SINK VALVE TEST TOLERANCE SHEET

THIS CHART BASED REFLECTS THE RESULTS
OF TWENTY ONE TESTS CONDUCTED UNDER VARIOUS
ENVIRONMENTAL CONDITIONS. 80% ARE BETWEEN
70 TO 80 HOURS.
ALL TESTS WERE CONDUCTED IN OCEAN WATER.
X DENOTES ACTUAL TEST.
ALL TESTS WERE CONDUCTED WITH 25 OHMS RESISTANCE.

50 55 60 65 70 75 80 85 90

LIFE IN HOURS

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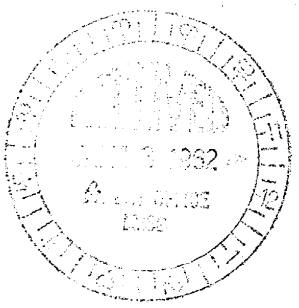

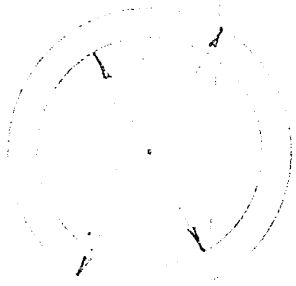

1.97 DIA.

1.50 DIA.

NOTES:-

1. MATL. - .03 THK. PHENOLIC SHT.

2. N/A T2-1285

INSULATOR-E-C SINK VALVE-ASS'

FULL SCALE 11-11-60 F.W.

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T2-1284

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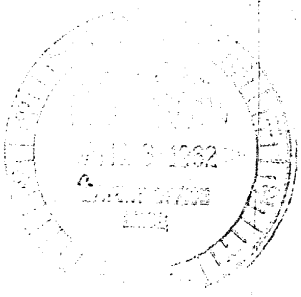

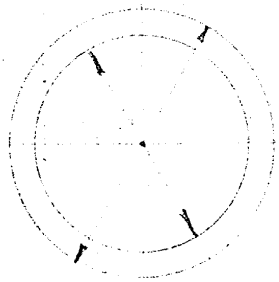

1.75 DIA — — 1.42 DIA.

NOTES:—

1. MAT'L.- .06 THK. SMOOTH FINISH SILICON RUBBER SHT.

2. N/M T2-1285

GASKET- E-C SHOK VALVE -#5 C'

FULL SCALE 11-11-60 F.N.

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TB 1283

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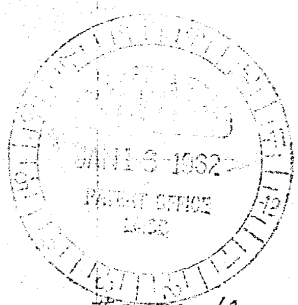

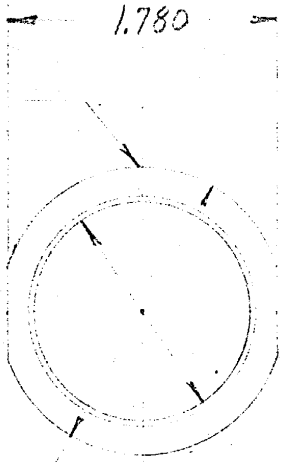

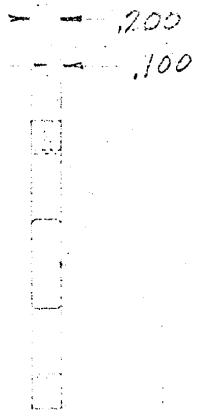

NOTES:-

1. MAT'L - 2024-T4 AL.
2. FINISH - ALODINE
3. MIL-T2-1285

NUT - E.C SHIELDING - ASC

FULL SCALE 11-10-60 F.W.

T2-1282

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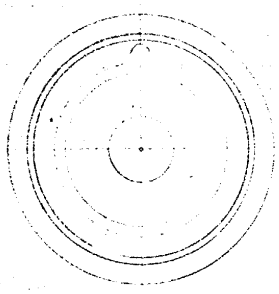

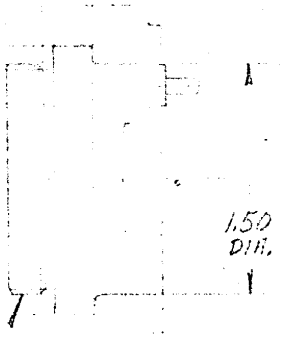

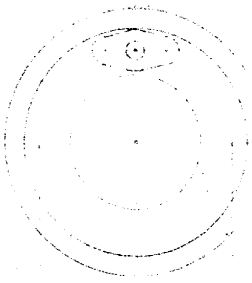

NOTES:

1. MAKE FROM 1370016 NAVY MK II MOD 0 STERILIZER

2. N/H T2-1285

E-C SINK VALVE - H&C

FULL SCALE 11-10-60 F.W.

T2-1281

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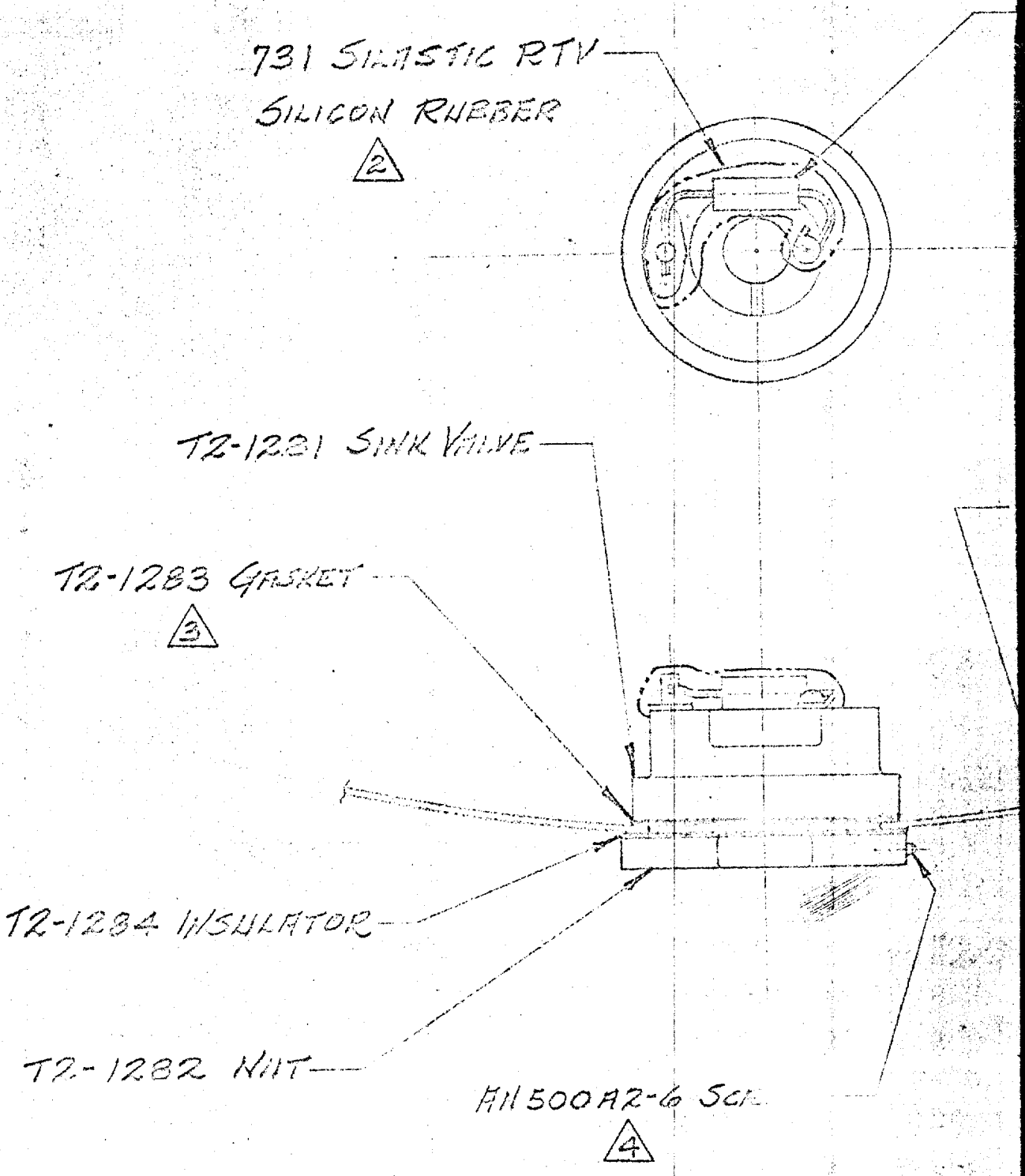

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NOTES:

1. CUT RESISTOR TO PROPER LENGTH. TEST SO IT WILL NOT TOUCH ADJACENT SURFACE. ALL CONNECTIONS MUST BE CLEAN.

2. COMPLETELY POT RESISTOR & CONNECTIONS AS SHOWN.

3. BOND T2-1283 GASKET TO T2-1281 SINK VALVE WITH RTV 90 SILICONE CEMENT.

4. INSTALL SCREW THREADS WITH GLYPTAL VARNISH.

(REF.)

NO. REQ.	PART NO.	TITLE
A/R	RTV 90	SILICONE CEMENT
A/R	RTV 7?1	SILASTIC SILICONE [illegible]
A/R		GLYPTAL
1	2.2 OHM	RESISTOR
1	FN500AA-3	SCREW
1	T2-1284	INSULATOR
1	T2-1283	GASKET
1	T2-1282	NUT
1	T2-1281	SINK VALVE

DATE	BY
3/16/61	[illegible]
3/16/61	[illegible]
3/16/61	[illegible]

ASSY - E-C SINK VALVE - A&C

FULL SCALE 11-11-60 F.M.

T2-1285

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B-03-1567